

CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of bonding surfaces of two or more objects after the objects have been surface-treated, comprising:

surface-treating by controlling at least one of the bonding surfaces to be bonded together so as to have a predetermined roughness in which the bonding surface has a profile including fine peaks formed at close intervals, and removing a bonding inhibitor substance from the bonding surfaces by pressing the bonding surface having fine peaks formed at close intervals against the other of the bonding surfaces so that the fine peaks shear a layer of bonding inhibitor substance from the other of the bonding surfaces, and attaching a bonding enhancer substance on the bonding surfaces; and

bonding by bringing the bonding surfaces of the two or more objects into contact with each other and bonding them.

2. (Previously Presented) The bonding method according to claim 1, wherein the surface-treatment step includes an initial surface cleaning step of removing bonding inhibitor substances that exist on the bonding surfaces.

3. (Original) The bonding method according to claim 1, wherein each step is performed under the atmospheric pressure.

4. (Original) The bonding method according to claim 1, wherein, when the bonding surface has a surface roughness that is inappropriate for the materials to serve as a bonding surface, controlling of the surface roughness include a step of processing and controlling the bonding surfaces to have an appropriate surface roughness.

5. (Previously Presented) The bonding method according to claim 4, wherein the surface roughness process/control step performs transferring an uneven surface profile to one bonding surface using a tool formed with a profile having a predetermined roughness.

6. (Original) The bonding method according to claim 4, wherein the surface roughness process/control step is a method using atmospheric plasma.

7. (Original) The bonding method according to claim 4, wherein the surface roughness processing/control step is a blast treatment method wherein fine particles are blown.

8. (Original) The bonding method according to claim 1, wherein the surface-treatment step includes projecting energy particles or waves toward the bonding surfaces under the atmospheric pressure.

9. (Previously Presented) The bonding method according to claim 1, wherein the surface-treatment step is performed at the same time with the bonding step.

10. (Previously Presented) The bonding method according to claim 1, wherein the surface-treatment step includes ultraviolet irradiation.

11. (Previously Presented) The bonding method according to claim 1, wherein the surface-treatment step includes irradiation of substances generated by atmospheric plasma.

12. (Previously Presented) The bonding method according to claim 1, wherein the bonding step is performed at room temperature.

13. (Currently Amended) An apparatus for bonding surfaces of two or more objects after the objects have been surface-treated, the apparatus comprising:

a surface treater that treatment means for removing a bonding inhibitor substance from and attaching a bonding enhancer substance on controls at least one bonding surface ~~that has been controlled~~ to have a predetermined roughness in which the bonding surface has a profile including fine peaks formed at close intervals, and removes a bonding inhibitor substance from the bonding surfaces by pressing the bonding surface having fine peaks formed at close intervals against the other of the bonding surfaces so that the fine peaks shear a layer of bonding inhibitor substance from the other of the bonding surfaces, and attaches a bonding enhancer substance on the bonding surfaces;
and

a bonder that contacts bonding means for contacting the bonding surfaces of the two or more objects to bond them.

14. (Currently Amended) The bonding apparatus according to claim 13, wherein the surface ~~treater treatment means~~ is provided with an initial surface cleaner that removes ~~cleaning means for removing~~ bonding inhibitor substances that exist on the bonding surfaces.

15. (Currently Amended) The bonding apparatus according to claim 13, wherein the surface ~~treater treatment means~~ performs treatment under the atmospheric pressure.

16. (Currently Amended) The bonding apparatus according to claim 13, further comprising a surface roughness processor/controller that processes ~~processing/control means for processing~~ the bonding surface to have a surface roughness appropriate for the material.

17. (Currently Amended) The bonding apparatus according to claim 16, wherein the surface roughness processor/controller ~~processing/control means~~ transfers an uneven surface profile to one bonding surface using a tool formed with a profile having a predetermined roughness.

18. (Currently Amended) The bonding apparatus according to claim 16, wherein the surface roughness processor/controller ~~processing/control means~~ processes the bonding surface using atmospheric plasma to have a predetermined roughness.

19. (Currently Amended) The bonding apparatus according to claim 16, wherein the surface roughness processor/controller ~~processing/control means~~ is a blast treatment device which blows fine particles to one bonding surface to have a predetermined roughness.

20. (Currently Amended) The bonding apparatus according to claim 13, wherein the surface ~~treater treatment means~~ is an ultraviolet irradiator ~~irradiation device~~.

21. (Currently Amended) The bonding apparatus according to claim 13, wherein the surface ~~treater treatment means~~ is an atmospheric plasma ~~treater treatment device~~ which irradiates substances generated by atmospheric plasma.

22. (Currently Amended) A method of bonding surfaces of two or more objects after the objects have been surface-treated, comprising:

surface-treating by controlling at least one of the bonding surfaces to have a predetermined roughness in which the bonding surface has a profile including fine peaks formed at close intervals, and modifying the bonding surfaces by pressing the bonding surface having fine peaks formed at close intervals against the other of the bonding surfaces so that the fine peaks shear a layer of bonding inhibitor substance from the other of the bonding surfaces, on which no bonding inhibitor substances exist or from which bonding inhibitor substances have been removed, by letting bonding enhancer substances adhere under the existence of substances that adhere to the bonding surfaces in the atmosphere; and

bonding by contacting the modified bonding surfaces of the two or more objects and bonding them.